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# USSR Report

## AGRICULTURE

No. 1332

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# PARTY OFFICIAL REVIEWS LATVIAN AGRICULTURAL PROGRAM

Moscow EKONOMIKA SEL'SKOGO KHOZYAYSTVA in Russian No 4, Apr 82 pp 3-14

[Article by A. Voss, first secretary of the Central Committee of the Communist Party of Latvia: Increasing the Stability of Agricultural Production"]

[Text] Workers of Soviet Latvia, like all Soviet people, entered the second year of the Eleventh Five-Year Plan confidently and in good spirits. Looking back, we can say that last year was very busy, it was the year of the worker, and a very important year politically and economically. This was the year of the 26th CPSU Congress which will go down in the history of our party and state as an extremely large event of modernity. It was the year of the November Plenum of the CPSU Central Committee which reviewed the plans of the Eleventh Five-Year Plan.

In his report at the 26th Party Congress and his speech at the November (1981) Plenum of the CPSU Central Committee, Comrade L. I. Brezhnev gave a comprehensive development of the basic and crucial problems of the country's economic and social development in the modern stage, he outlined the main directions of the domestic and foreign policy of the CPSU, and he advanced a militant program of activity for the party and people for further development of the productive forces, improved public well-being, and the achievement of new goals in economic, social and cultural construction.

For agricultural workers, machine operators, scientists, specialists, party, soviet, trade union and Komsomol workers and all workers of Soviet Latvia, last year was marked by one more notable event--the warm and inspiring greeting from Comrade L. I. Brezhnev in connection with the successful fulfillment of socialist commitments for the sale to the state of grain, potatoes, vegetables and other farm products. Communists and all workers of the republic received this paternal greeting as concrete guidance to action, as a militant program for all of our work.

The self-sacrificing labor of the kolkhoz and sovkhoz workers, the daily purposeful work of party, soviet, trade union, Komsomol and economic agencies of the republic, and the large amount of assistance that has been rendered by the Politbureau of the CPSU Central Committee and the Soviet government have made it possible to take a confident step along the path to surmounting the extremely unfavorable weather conditions of the last five-year plan.

As compared to the average annual procurements under the Tenth Five-Year Plan, in 1981 we sent to the receiving points 37 percent more grain, 24 percent more potatoes, 15 percent more vegetables and 41 percent more fruits and berries. Meat and egg production increased somewhat. The republic's feed balance has improved appreciably. For example, we have prepared 26 percent more coarse feeds than in 1980. The planting of winter crops was done mainly at the optimal time periods. Much more fall fallow land has been plowed and it has been fully seeded with spring grain crops, potatoes and perennial grasses.

The starting point for these achievements were the results of the Tenth Five-Year Plan. On the whole they were quite significant. The average annual production of meat increased by 43,700 tons, milk--by 24,600 tons, and eggs--by almost 89 million. The production of grain, sugar beets and several other agricultural products also increased.

During the past five-year plan a good deal was done for further deepening of specialization and concentration of agricultural production on the basis of interfarm cooperation and agro-industrial integration, as the main path to intensifying agriculture and strengthening the material and technical base of the kolkhozes and sovkhozes. In 1977 the fourth Plenum of the Central Committee of the Communist Party of Latvia developed and adopted a detailed program regarding this which was intended for the period up to 1990 and envisioned intensive and efficient utilization of land and material and technical funds, as well as accelerated growth of the production of agricultural products.

The republic now has more than 70 interfarm enterprises, organizations and associations. More than 170 animal husbandry complexes for producing milk and 17 for raising and fattening hogs have been constructed and are operating on the kolkhozes and sovkhozes. Thus we have taken an important step forward in strengthening the material and technical base of agriculture and improving their administration. Here one might add that during the five years 2 billion rubles or one-third of all the capital investments of the republic were invested in strengthening the material base of agriculture.

The Central Committee of the Communist Party of Latvia has taken all possible measures to soften the harsh blows of the elements more rapidly and to overcome their consequences. In March 1979 the 12th Plenum of the Central Committee of the Communist Party of Latvia earmarked additional measures to increasing the production and sale to the state of meat, milk and other animal husbandry products in 1979-1980. Special attention was devoted to accelerated development of hog raising as the branch of meat animal husbandry which produces the quickest results. As a result of the efforts that have been made, an additional 337 sties of the simplified reinforced type have been constructed to accomodate 200,000 hogs, the number of head of hogs has been increased sharply, and the feed base has been improved significantly. All this has been done on the basis of a well-thought-out, short-term special-purpose comprehensive program, taking local resources and materials into account. And now we can say with satisfaction that the measures adopted by the 12th Plenum of the Central Committee of the Communist Party of Latvia were correct and timely. Their implementation made it possible for the kolkhozes and sovkhozes of the republic, even in 1981, such a difficult year for agriculture, to increase meat production by 17 percent as compared to 1979, including pork--by 23 percent.

Resting on the foundation of what was achieved under the Tenth Five-Year Plan, all our organizational-party and mass political work is being perfected. We must work much better, organize production better, fulfill the plans better, in other words, work more efficiently and double and triple our efforts. After all, the Eleventh Five-Year Plan has set very large and difficult tasks for us. It will be necessary to work a great deal and very persistently, to fully utilize all existing reserves and possibilities for achieving the goals earmarked by the five-year plan. At the same time the main efforts of the republic party organization are being concentrated on the most crucial problems of economic construction and ways of solving them.

At the 26th Party Congress and the November (1981) Plenum of the CPSU Central Committee, Comrade L. I. Brezhnev named the food program as a primary task, which is economically and politically the central problem of the entire five-year plan. The basis of its solution consists in high rates of agricultural production. These rates were also envisioned in the five-year plan for the economic and social development of the republic. The average annual grain yield is to be increased by 664,000 tons during the five-year plan, and the average annual productivity of grain crops is to be increased by 30 percent. By 1985 we must increase meat production in live weight on all categories of farms to 455,000 tons, with an average annual increase of 13.5 percent, and milk production--to 1,935,000 tons. In other words, we are obligated to provide for accelerated growth of production and sales to the state of all crop growing and animal husbandry products, especially meat and milk, and in all ways increase the productivity of the fields and farms.

When setting these tasks we take into account, naturally, the possible unfavorable weather conditions. Their negative effects on the final results of our work cannot, of course, be disregarded. As Comrade L. I. Brezhnev noted at the November (1981) Plenum of the CPSU Central Committee, we have weather that is unfavorable for agriculture almost every other year. Therefore it should be regarded not as an exception, but as a phenomenon of our climate which is quite ordinary and natural. Hence the logical conclusion: until we have learned to command the weather, work in agriculture must be more skillfully adapted to climatic adversities.

The practice of the leading kolkhozes and sovkhozes of the republic show that in places where the science of farming is on a sufficiently high level the yields are high and stable even under unfavorable weather conditions and all branches of agriculture, including animal husbandry, developed intensively.

For example, the Padom'yu Latviya Kolkhoz in Rizhskiy Rayon. Under the Tenth Five-Year Plan as compared to the Ninth, its workers increased the production of grain by 91 percent, potatoes--by 63 percent, milk--by 49 percent and meat--by 88 percent. One also finds high rates of increase in agricultural output on the Krasnyy Oktyabr' Kolkhoz in Preyl'skiy Rayon and several other farms. And they have worked under the same weather conditions as the other kolkhozes and sovkhozes. The republic has quite a few examples of how individual kolkhozes and sovkhozes, but not entire rayons, receive large yields of crops from year to year, regardless of weather conditions, prepare a sufficient quantity of feed, and promptly fulfill the plans for the production and sale of products to the state.

The workers of Rizhskiy Rayon provide an example of self-sacrificing and stable work. Last year, like during all years of the Tenth Five-Year Plan, they were the first in the republic to settle up with the state in terms of grain sales, and they produced a significant quantity of above-plan potatoes, vegetables and other food products. Workers of Kraslavskiy, Madonskiy and Aluksnenskiy rayons greatly overfulfilled the plans and socialist commitments for sale to the state of grain, potatoes and vegetables.

The agro-industrial associations of Talsinskiy and Valmiyerskiy rayons, which did a great deal to improve the administration of agriculture, provided for stable rates of increase in the production of agricultural products and their sale to the state.

The Central Committee of the Communist Party of Latvia and the republic government are doing everything in their power to make this experience common to everyone so as to protect our agriculture from the influence of unfavorable weather and its unforeseeable caprices as much and as quickly as possible. An entire arsenal of agrotechnical devices, reserves of seed growing, and the introduction of crops that provide for good yields with either a shortage or an excess of moisture, and all the possibilities of further development of land reclamation, chemization and mechanization of agriculture are being directed toward solving this complex problem. This is also the goal of the work of party, soviet and agricultural agencies, farm managers and specialists, and kolkhoz and sovkhoz workers.

The implementation of the extensive plan for land reclamation which was earmarked by the party and the government after the May (1966) Plenum of the CPSU Central Committee contributes more than anything else to ensuring a high and stable level of agricultural production. This, one may boldly state, is the main component in the transformation of the Baltic area into a zone of stable harvest. It makes it possible to lessen the blows of the elemental forces of nature and makes it possible for our agriculture to rise to a higher stage of development.

Our republic, like other regions of the country, has developed and is persistently implementing an extensive comprehensive program for draining excessively damp land and bringing marshes and land that is overgrown with bushes into agricultural circulation. During 1966-1980 the republic spent 1,264,000 rubles in capital investments to implement the measures of this program and it significantly reinforced the material and technical base of water management organizations.

Since the May (1966) Plenum of the CPSU Central Committee, the area of drained and irrigated land has increased 2.4-fold, including plowed land--2.8-fold. Land reclamation work has been done on an area of 1.3 million hectares, which amounts to 56 percent of all the agricultural land in the republic. Under the Eleventh Five-Year Plan it is intended to bring 260,000 hectares of drained and irrigated land into circulation, and do amelioration work on 50,000 hectares that do not require draining. It is also intended to increase such agromelioration measures as draining surface water, subsoil tilling of reclaimed land, levelling of the surface and so forth.

In order to improve the utilization of reclaimed land, scientists of the republic have developed a comprehensive program for the introduction into production of

scientifically substantiated systems of farming and recommendations for agricultural assimilation of land reclamation projects that have been released for operation. In order to improve planning and provide for efficient selection of reclaimed land, the Latgiprovodkhoz Institute has drawn up a plan for land reclamation for 1981-1985 and introduced improved normatives that are directed towards accelerated intensiveness of drainage of land. A good deal has been done to increase the reliability of drainage and irrigation systems and to improve their operation. In order to increase the efficiency of land utilization, the farms need an efficient road network. At the present time it is intended to construct up to 1 kilometer of road per 100 hectares of drained area, and by 1985 this indicator is to be increased to 2 kilometers.

Successful fulfillment of the volumes of work earmarked for land reclamation requires a real solution to a number of pressing problems and increased deliveries of land reclamation equipment--bulldozers, stump removers, excavators and other special machines. Late replacement of machines, which are outdated and obsolete, and their inadequate reliability lead to rapid aging of the fleet, increased operational expenditures, and large turnover of machine operating personnel. The problem of providing the farms with technical equipment for caring for and repairing land reclamation systems is being resolved very slowly and unsatisfactorily. Now, when the republic has almost 1.5 million hectares of drained land, this problem is becoming more and more crucial.

We have much agricultural land which does not need draining, but requires amelioration work. But the land reclamation workers are very unwilling to deal with them because, in the first place, there are not enough machine operators everywhere, and, in the second place, these operations are significantly less expensive. Kolkhoz-sovkhoz land reclamation detachments could render extremely essential assistance here, but no special technical equipment is allotted to them. Thus life itself places on the agenda the quickest possible solution to this problem.

Of course, if one speaks in the broad sense, land reclamation is an organic part of the science of farming, and it influences the advancement of farming both directly and indirectly. But it does not follow from this that it is possible to devote less attention to such questions as prompt and high-quality cultivation of the fields, correct crop rotations, the selection of the best strains of agricultural crops, efficient application of fertilizers, care for the planted areas, or the fight against pests of agricultural plants and losses of the crop, or many other things.

Land reclamation, the application of fertilizer to the fields and the observance of the requirements of agrotechnology should go hand in hand. Today all farmers know a simple, much verified truth: drained land does not produce guaranteed high yields if the most advanced and effective agrotechnical devices of cultivating agricultural crops are not used on it, if land reclamation is not combined with intelligent utilization of organic and mineral fertilizers. Observing this rule, the kolkhozes and sovkhozes of the republic in 1976-1980 received from each hectare of drained area as compared to other agricultural land 62 percent more grain, 47 percent more flax fiber, 38 percent more potatoes, 56 more vegetables, 63 percent more fodder root crops and 39 percent more perennial grasses. The indicators of individual farms--such as, say, the Tervete and Kron'autse kolkhozes in Dobel'skiy Rayon, the Padom'yu Latviya and Marupe in Rizhskiy Rayon, the Padom'yu yaunatne in Yelgavskiy Rayon and others--are even more impressive.

Under the Eleventh Five-Year Plan the task has been set of increasing the productivity of the main agricultural crops from drained land 1.2-1.6-fold, and the gross yield, 1.5-2-fold. To do this each kolkhoz and sovkhoz, in addition to carrying out land reclamation work, must clearly determine and unwaveringly implement all other measures for improving the land as the main means of production in agriculture and for increasing the productivity of agricultural crops. In other words we must efficiently utilize everything for the purpose of a stable increase in productivity so that they do not oppose one another but are applied in a harmonious combination.

The steady development of the productive forces of agriculture and the consistent increase in the stability of all of its branches are inseparably related to the expansion of the application of means of modern chemistry. As domestic and world practice shows, extensive and skillful utilization of these means produce approximately half of the increase in agricultural output. The Tenth Five-Year Plan was a period of further comprehensive chemization of agriculture. Our republic, whose agricultural land is almost all soddy podzolic and soddy clay soil and is characterized by low natural fertility, has received and utilized 270,000 more tons of mineral fertilizers during the years of the past five-year plan than it did under the Ninth Five-Year Plan, and 587,000 tons more than under the Eighth. While in 1966-1970 each hectare of intensively utilized land received an average of 118 kilograms of effective substance of nitrogen, phosphorus and potassium, during 1976-1980 this figure was already 184 kilograms. Under the current five-year plan the deliveries of mineral fertilizers will increase by another 17.6 percent, and their quality will also improve.

Measures are also being taken to increase the liming of acid soils. According to the figures from an agrochemical examination of them conducted in 1964, 64 percent of the intensively utilized land in the republic had a strongly acid or acid reaction. As a result of systematic liming of this land (during the past two five-year plans alone this work was done on 1,745,000 hectares) the area of acid soil has been reduced to 28.5 percent. This important work, which plays a large role in increasing the stability of agricultural production, will be continued and improved.

The accumulation and application of local organic fertilizers to the soil have increased considerably. During the past ten years their average annual production increased more than 1.5-fold and reached 15.7 million tons. The kolkhozes and sovkhozes and all agricultural agencies of the republic are faced with the task of waging a struggle everywhere for maximally effective utilization of mineral and organic fertilizers, and they must decisively eliminate losses of these.

One of the most important means of obtaining high and stable yields of all agricultural crops and increasing the stability of all agricultural production is seed growing. It is generally known that a highly intensive strain of good seeds are the basis of the harvest. With the appropriate strain agrotechnology this is the most effective and least capital-intensive means of increasing productivity and increasing the gross yields of products. We are doing all the work in this area on the basis of a special comprehensive program which stipulates the necessary measures for further improvement of selection and seed growing for grain crops and grasses.

The republic has created a broad network of specialized farms for producing and selling seeds and updating the strains. Under the Eleventh Five-Year Plan the use of elite seeds and seeds of the first reproduction is being considerably expanded and we are introducing regionalized and promising new strains of grain and pulse crops and perennial grasses, and we are also strengthening the material and technical base of seed growing (during the remaining four years of the five-year plan specialized seed growing farms are to construct 78 grain storehouses and 48 grain dryers. The process of concentration and specialization of seed growing will continue more intensively.)

The increased requirements for greater stability of agricultural production make it incumbent on us to engage specially in the acceleration of scientific and technical progress in rural areas. The 26th CPSU Congress set for scientists the task of rapidly solving the key national economic problems. It was noted that a basic part of this is the introduction of discoveries and inventions. The most effective form of utilization of the achievments of science is its integration with production through the creation of scientific-production and production-scientific associations.

The republic party organization devotes no small amount of attention to the multifarious questions of the development of agricultural science and practical utilization of its results. In order to give this important work a planned and purposive nature, the bureau of the Central Committee of the Communist Party of Latvia approved a broad program for the introduction of the achievements of science and advanced practice into agricultural production for the current five-year plan, and approved an efficient system of future agriculture which was developed on the basis of the experience of the leading farms by the collective of scientists of the Latvian Agricultural Academy, the Academy of Sciences of the Latvian SSR and scientific research institutes of the republic Ministry of Agriculture. A large role in this system is assigned to the introduction of new and promising strains of grain crops and table potatoes, sugar beets, new varieties and strains of feed crops, progressive technical equipment and technology, and so forth.

One of the most responsible areas, where it is necessary to concentrate the efforts of all agricultural workers, is feed production. The work of procuring and processing feeds will have to be separated into an independent branch, re-equipped with new technical equipment and, on the basis of new technologies, it will be necessary to improve the quality of feeds and the provision of them for the livestock. On the initiative of specialists of the Uzvara Kolkhoz in Bauskiy Rayon and scientific workers of the Institute of Microbiology imeni A. Kirkhenshteyn of the Latvian SSR Academy of Sciences and institutes of the Ministry of Agriculture, construction has already been started on an experimental complex for feed production. According to technology developed by the scientists, the shops of this complex will prepare full-ration feed of various formulas for animals of various age groups. It is intended to process all the biomass of the yield here, in order to extract vegetable protein and to locally produce nutritive yeasts through microbiological fermentation of the juice of green plants, and to transform coarse feeds into feeds with increased digestibility without significant energy expenditures.

As an experiment in Valmiyerskiy Rayon, under an order from the agro-industrial association, a plant is being constructed to produce feed molasses and nutritive yeasts from inexpensive raw material--peat from marshes from the upper reaches of the rivers. The unique technology for this production was developed by the Institute of Timber Chemistry of the Latvian SSR Academy of Sciences in cooperation with scientists of scientific research institutes of the republic Ministry of Agriculture. The first part of the enterprise is to go into operation under the current five-year plan, which will make it possible to utilize existing feed resources more efficiently by improving their balance.

All the key problems of advancing the science of farming, further deepening land reclamation, chemization and industrialization of agriculture, improving the work for training and retraining personnel, introducing the achievements of science and advanced practice into production and other problems related to priority development of all the branches of agricultural production have been more fully reflected in the republic food program. It was drawn up on the basis of experience the republic has accumulated in program-target planning and occupies a leading position among the twelve special-purpose comprehensive programs that were developed for the Eleventh Five-Year Plan.

At the November (1981) Plenum of the CPSU Central Committee, Comrade L. I. Brezhnev emphasized that the food program should join together the efforts in agriculture itself, the branches of industry that serve it, and the system for procuring, storing, processing, transporting and trading in agricultural products. And, especially important, it should subordinate the work of all of the aforementioned branches to a common final goal--satisfying the country's demand for foodstuffs.

The republic's comprehensive food program, which will be an organic constituent part of the unionwide food program, basically meets these requirements. It consists of four basic subprograms: "Feed Production," "The Infrastructure," "Agricultural Service," and "Processing and Sales."

The goal of the subprogram entitled "Feed Production" is to provide for stable growth of the production of feeds in the volumes necessary for full satisfaction of the demands of animal husbandry, reducing to a minimum the effects of climatic factors on their production. This subprogram determines the most efficient structure of feeds, measures for arranging seed growing and increasing the productivity of agricultural crops, and the structure for the storage of grain and coarse and juicy feeds, and also for mineral fertilizers, as well as measures for improving the balance of feeds in terms of protein and amino acids. A complex of measures has also been envisioned for further advancing the science of farming, reducing losses in harvesting, procuring and storing feeds, and preparing them for feeding.

The subprogram entitled "Infrastructure" has the goal for providing for rapid rates of construction of housing and social and cultural facilities in rural areas, above all on economically weak farms. The measures of this subprogram include assigning personnel, especially to economically backward farms and it also contains measures for strengthening their economy and the basis of the organizations that serve these farms.

The implementation of the subprogram entitled "Agricultural Service" will raise the level of repair and technical servicing of tractors and agricultural machinery and the level of mechanization and technical servicing of animal husbandry farms and energy installations, and will contribute to improving the centralized shipment of agricultural products as well as perfecting the organizational forms of administration of the agro-industrial complex at all of its levels.

The subprogram entitled "Processing and Sales" is directed toward providing for the production of high-quality food products in the necessary assortment, and improving their storage and transportation to the consumers.

A most important factor in the implementation of the food program, like a number of others, will be stable operation of construction organizations of the republic. Therefore increasing the efficiency and improving the quality of capital construction in the republic has become the content of a special comprehensive program.

I wish to discuss individually those measures that are being undertaken by the Central Committee of the Communist Party of Latvia and the republic's government for boosting up economically weak farms. Because of a number of factors a considerable group of kolkhozes and sovkhozes are now carrying on production under conditions which are much worse than the average for the republic. Unfortunately, the arrears do not decrease with the years, and in a number of places they are even increasing. The work for boosting the economies of backward farms has been included in the republic food program.

The development of a special-purpose program or its constituent parts (subprograms) always involves serious economic research, the clarification of cause and effect relationships, and the search for resources for achieving the goals. The reasons for the financial difficulties of individual kolkhozes and sovkhozes are not always the same. Scientists have established that of the 115 farms which are included in this group, approximately 80 of them are behind because of factors that do not depend on their managers. They carry on production on poor, hilly fields, they have considerably less fixed capital and housing, they receive less mineral fertilizers and technical equipment than the economically strong farms do and they suffer from a shortage of labor force. Land reclamation is not being carried out at adequate rates on them.

How does one rectify this situation? During the forthcoming five-year plan one-third of the capital investments for land reclamation work are to be used for backward farms. This will help them a great deal if one takes into account that the weak farms include one-fifth of the agricultural land.

Or take construction problems. They are perhaps the most complicated in rural areas. And on backward farms construction issues become especially critical. Last year the question of construction in rural areas was brought up for discussion at the plenum of the Central Committee of the Communist Party of Latvia. Among the many important problems that were principally solved at the plenum, the issue of comprehensively building up rural population points was crucial. This is a very timely statement of the problem. For the 26th CPSU Congress condemned the practice whereby, when reporting about the startup of new enterprises, they speak only of

production facilities and remain silent about what has been done for those who will have to work there and the conditions for the life and recreation of the people. A good many examples of well-thought-out solutions to problems of social development were given at the plenum and they helped to resolve basic production problems as well.

All of them confirm that the selected course toward comprehensively building up rural villages is correct. They also envision more rapid rates of construction on economically weak farms. Under the current five-year plan 35 percent of the entire volume of construction and installation work which is to be done within the limits of the republic Ministry of Agriculture will be done on this group of farms. Of all the capital investments intended for construction of facilities for large horned cattle, 32 percent will be used for their development. It is intended to put 80 grain storehouses and grain dryers, 60 warehouses for mineral fertilizers, 20 potato storehouses, and many storage facilities for hay, silage, haylage and other feeds into operation on economically weak farms during the five-year plan.

Housing and domestic construction will proceed especially rapidly on the backward farms. More than 30 percent of the residential area to be constructed in rural areas and almost half of the accomodations in children's preschool operations will be put into operation here. No less than 50 public catering and retail trade facilities, as many permanent complex receiving points for consumer services and other facilities for cultural and domestic purposes will be constructed on backward farms.

It is also intended to improve considerably the material support for those kolkhozes and sovkhozes that are producing under difficult natural conditions. It has been calculated that the backward farms produce approximately 15 percent of the agricultural products. In order to increase their energy availability, it has been decided to deliver about 25 percent of the machines and mechanisms for agriculture to them under the Eleventh Five-Year Plan.

One can note with satisfaction that this program is beginning to be implemented in many places. The arrears have been successfully overcome on many farms of Preyl'skiy, Daugavpilsskiy, Stuchkinskiy, Liyepayskiy and Tsesisskiy rayons.

Improvement of material support is a very important, but not the only factor that contributes to boosting economically weak farms up to the level of the leading ones. The situation cannot be rectified by increasing material resources alone. It has been established that in at least 20 cases out of 100 the reasons for the arrears consist in various organizational shortcomings.

Practice has shown that just replacing the manager does not always entail a deep organizational restructuring of the operation of a backward farm. Therefore party and soviet agencies have begun to apply another method more and more frequently: forming strong groups of management workers so that they can be entrusted with the administration of all the main branches of the backward kolkhoz or sovkhoz. And this practice has completely justified itself.

Rayon agro-industrial associations should play a large role in boosting farms that make less money up to the average republic level. Interfarm cooperation and intensification of kolkhoz and sovkhoz production are the most effective single path to increasing the production of agricultural products.

Well-thought-out organization of this work makes it possible to reach the goals which the party set for agriculture with reduced expenditures of time and money. When developing the food program a great deal of attention was devoted to improving the economic mechanism of the system of administration both of agricultural production directly and of the agro-industrial complex as a whole.

Under the past five-year plan Latvia took important steps in the direction of specialization and concentration of agricultural production on the basis of agro-industrial integration. We began the search for more effective forms and methods of administration in order to efficiently utilize land, labor and technical equipment and, on this basis, to increase the efficiency of all agricultural production. Special attention was devoted here to improving the rayon level of administration.

At the November (1981) Plenum of the CPSU Central Committee Comrade L. I. Brezhnev emphasized that it was necessary to strengthen in all ways the rayon level of administration as well. It is necessary to create conditions which will more actively stimulate growth and increased intensiveness of agricultural production, motivate the initiative of the kolkhozes and sovkhozes and all levels of the agro-industrial complex, and make them work not for intermediate indicators, but for a high final result.

One must say that the economic mechanism for the interaction of the kolkhozes and sovkhozes with the enterprises serve them was outdated and did not meet the requirements of the day--to produce as much grain, milk, meat and other products as possible. The calculated prices established between the partners for products and work were frequently unsubstantiated. A situation was created whereby part of the profit "earned" by one enterprise was transferred to another. One can give many examples of this. And the kolkhozes and sovkhozes themselves were frequently given instructions, even about trivia: they were given instructions about when to begin planting, when to harvest the crops and so forth. In a word, it was necessary to bring the administration closer to production, to provide for a comprehensive approach to the development of agriculture in the administrative rayon, and to improve the economic mechanism of the interaction among all farms, enterprises and organizations on the territory.

The Talsinskiy Rayon agro-industrial association was created in the republic in 1976 as an experiment. In addition to kolkhozes and sovkhozes it included state and interfarm enterprises and organizations: the rayon production association of Goskomsel'khoztekhnika, the mobile mechanized column for water management construction of the Latvian SSR Ministry of Land Reclamation and Water Management, a specialized mobile column of the Latvspetssel'montazh trust, the rayon interkolkhoz construction organization, and the Stendskaya experimental selection station of the Latvian Scientific Research Institute of Farming and Economics of Agriculture. The association also included enterprises and organizations that are engaged in processing and storing agricultural products. As before, they are under the jurisdiction of their higher organizations, but in terms of fulfillment of the plans for

the volume of services rendered and the time periods and quality of work done for members of the association, they are under the jurisdiction of its council.

The principal distinction of the new form of administration consists in that each collective, regardless of its departmental jurisdiction, is now interested not only in its own production success, but also in the success of each partner, and this means the association as a whole. Everyone now has a common task--to obtain as many agricultural products as possible with the least expenditures. The association's council, which includes representatives of all farms and enterprises, the rayon party organization and people's deputies, have become the highest administrative agency and bears all responsibility for the development of all branches. It has material and financial resources at its disposal. The council has been given the appropriate rights, which make it possible to regulate the interfarm relations.

At the same time each enterprise retains legal and economic independence and arranges its activity under autonomous financing. And the association as a whole operates with complete autonomous financing. The association's council forms centralized funds and, if necessary, establishes prices for products of interfarm exchange. The rayon agricultural administration did not have such rights. The association has them and it exercises them intelligently. For instance, the Kolkhoz imeni Lenin was relieved of the duty of providing commercial grain, but it must specialize and provide first-class seeds for itself and four other neighboring farms which no longer have to be concerned about planting material. The neighbors pay for them not at the state price, but at a lower calculated price. The association is deliberately reducing the high profitability of seed growing in order to raise the level of profitability of the production of commercial grain. The reproduction of young large horned cattle for replenishing the dairy herd, the raising of young hogs and the fattening of animals are organized according to the same principle. There is one goal here--to raise the level of profitability of the branches that are considered disadvantageous and to help strengthen the economy of previously backward farms.

We have been convinced that this form of administration is extremely promising. With the average republic level of quality of the land and obtaining the same amount of material and technical funds per unit of land, the kolkhozes and sovkhozes of the Talsinskiy Rayon agro-industrial association obtained considerably more meat, milk and other food products per 100 hectares of agricultural land than the average for the republic. They also produced more gross output per 100 hectares of agricultural land.

It is very important that from the beginning the association entered on a course toward the development of a material and technical base for processing and procuring industries on the kolkhozes and sovkhozes. This helps to reduce or prevent losses of products en route from the fields and farms to the consumer. Under the conditions of the association it is easier to provide for breakdown-free operation of the conveyor: field--proce ing--storage--sale of product.

The introduction of the new form of administration of the rayon's agro-industrial complex has made it possible to bring administration closer to production, to expand the rights and responsibilities of specialists of the branch services, and to

increase their responsibility for the final results of the labor. Planning and administration production have improved, interfarm ties have expanded and become stronger, more favorable conditions have been created for the introduction into practice of the achievements of scientific and technical progress and advanced experience, and personnel problems are being resolved in a more intelligent way.

Utilizing the Talsinskiy experience, which, we think, has fully justified itself, the Valmiyerskiy Rayon agro-industrial association was created. In a relatively short period of time, it was possible here also to do a great deal for specialization and concentration of production and increased efficiency and stability. During the years of the past five-year plan grain production on the kolkhozes and sovkhozes of the rayon increased by 7 percent, milk--by 13 percent and meat--by 25 percent. Animal husbandry is changing over confidently to an industrial basis. A considerable amount of work has been done to strengthen the material and technical base of hog raising and to concentrate poultry raising. It is very important that the production of seeds of grain crops and perennial grasses is being organized on an interfarm basis. By a decision of the association's council construction was started on an enterprise for producing nutritive yeasts. The rayon has extensively developed the construction of grain dryers, grain storehouses and storehouses for potatoes, and animal husbandry farms are being reconstructed.

Cooperating with funds for the construction of schools, children's preschool institutions and enterprises for social and cultural purposes makes it possible to accelerate the construction of these facilities. In order to equalize economic conditions for management and strengthen the material and technical base, the volumes of capital investments for the backward kolkhozes and sovkhozes were increased under the Eleventh Five-Year Plan. They increased 2.4-fold.

Today agro-industrial associations have been created in all rayons of our republic. The organization of a republic-wide agro-industrial association has been placed on the agenda. In our opinion, the creation of such an association will fully contribute to improving the administration of agriculture and solving the major task of the food program--significantly increasing the production and sale to the state of food products, increasing labor productivity and reducing financial, labor and material expenditures.

We are deeply convinced (and this has already been verified in practice) that through deepening specialization and concentration of agricultural production on the basis of interfarm cooperation and agro-industrial integration, our kolkhozes and sovkhozes, utilizing the advantages of the socialist system of management, will be able to greatly accelerate the rates of their development, increase the stability of agricultural production and the effectiveness of its intensification, and much more fully satisfy the growing needs of the republic and the country as a whole for foodstuffs and raw material for industry.

Of course we understand that the task of increasing the stability of agricultural production is not a simple one. It is complex from all standpoints--organizational, economic and scientific-technical. There are no trivial or secondary issues here. We are obliged to take into account and make "work" literally all factors and means for uniform and stable production of products from crop growing and animal husbandry.

Under these conditions the importance of executive discipline and the personal responsibility of people for matters entrusted to them increases many times over. And this means primarily the responsibility of the managers of kolkhozes, the directors of sovkhozes and agricultural and scientific organizations that serve agricultural enterprises as well as soviet and party leaders. They have been given extensive rights not for their own self-esteem, but in order to more fully utilize them in the interests of further advancing all branches of agriculture and more rapidly transforming it into a highly developed and rhythmically operating sector of our economy.

Agricultural workers of the Latvian SSR, like all Soviet people, are filled with resolve to make a worthy contribution to the implementation of the country's food program and the fulfillment of the decisions of the 26th Party Congress as well as all assignments of the five-year plan. Implementing the party's agrarian policy, they have taken on difficult socialist commitments: to increase the average annual volume of production of the gross agricultural output under the Eleventh Five-Year Plan as compared to the Tenth by 13 percent; to sell the state in 1982 1,501,000 tons of milk, 367,000 tons of cattle and poultry, 546 million eggs, 300,000 tons of grain, 290,000 tons of potatoes, 116,000 tons of vegetables, and 286,000 tons of sugar beets; to improve the quality of the agricultural products; to ensure that no less than 90 percent of the milk sold to the state is of the first grade, and to prepare no less than 16 quintals of feed units per conventional head of large horned cattle.

Rural workers are working especially hard now. Developing socialist competition with the Estonian SSR, they are striving through their self-sacrificing, creative labor to greet in a worthy way the outstanding event in the history of our Soviet homeland--the 60th anniversary of the USSR.

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# USSR PRIVATE PLOT BASIC ROLE, FUTURE DEVELOPMENT OUTLINED

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[Article by Aleksey Fedorovich Kalinkin, candidate of economic sciences: "The Development of the Private Subsidiary Farm"]

[Text] In the decisions of the 26th party congress and the November (1981) Plenum of the CPSU Central Committee special attention is devoted to further development of the kolkhozes and sovkhozes which are the basis of socialist agriculture. The kolkhozes, sovkhozes and other state socialist agricultural enterprises fulfill the function of the main source of production and procurements of agricultural products.

In 1980 about 100 percent of the grain, sunflower seeds, raw cotton and sugar beets (industrial) were produced in the public sector. Practically all of the country's feed resources are created there. Public farms provide 70-80 percent of the gross production of meat, milk, eggs and wool.

The role of the public farm in creating the country's state food resources is still great. It provides for all the state procurements of grain and technical crops and 92-97 percent of the procurements of meat, milk, eggs and vegetables.

The main role of the public farm is to provide the material needs of the kolkhoz and sovkhoz workers. For example, in 1980 income from the public farm and state comprised 73 percent of the total income of the kolkhoz family.

At the 26th CPSU Congress Comrade L. I. Brezhnev pointed out: "The kolkhozes and sovkhozes remain the basis of socialist agriculture. But this certainly does not mean that one can ignore the possibilities of private subsidiary farms. Experience shows that these farms can be a significant support in the production of meat, milk and several other products. Gardens, orchards, poultry and livestock belonging to the workers are part of our common wealth." (Materials of the 26th CPSU Congress, Moscow, 1981, pp 47-48).

The private subsidiary farm (LPKh) is considered by the party to be an additional source of production of agricultural products. It plays an appreciable role both in the production of a number of kinds of agricultural products and in the creation of a country's commercial food resources. In 1980 the private subsidiary farms

provided for 30-32 percent of the overall volume of production of meat, milk and eggs, wool--21 percent and vegetables--35 percent. The LPKh's play an appreciable role in the production of potatoes (64 percent) and fruits and berries (58 percent). In 1980 LPKh's provided 12 percent of the overall commodity output from agriculture in the country.

The right of Soviet citizens to keep private subsidiary farms has been determined by the USSR Constitution, where it is written that "citizens can have plots of land that are granted under the policy established by law for subsidiary farms (including maintaining cattle and poultry), garden and orchard raising and also for individual housing construction. The citizens are obligated to utilize the plots of land that are granted to them in an efficient way. The state and the kolkhozes render assistance to citizens for subsidiary farms." (Constitution [main law] of the Union of Soviet Socialist Republics, Moscow, 1978, p 10). Legislation of the union republics guarantees a similar right.

Private subsidiary farming will be developed more extensively under the Eleventh Five-Year Plan. It is indicated in the decisions of the 26th CPSU Congress: "To increase the production of meat, milk, potatoes, vegetables and fruits . . . on private subsidiary farms of the citizens, and also in gardening, orchard raising and rabbit raising fraternities (societies) of workers and employees and to render them assistance in acquiring young animals, feeds, seeds and fertilizers." (Materials of the 26th CPSU Congress, Moscow, 1981, p 166).

Regarding questions of keeping private subsidiary farms and further developing them, there is the decree of the CPSU Central Committee and the USSR Council of Ministers, "On Private Subsidiary Farms of Kolkhoz Workers, Employees and Other Citizens and Collective Gardening and Orchard Raising" (1977) and the decree of the CPSU Central Committee and the USSR Council of Ministers, "On Additional Measures for Increasing the Production of Agricultural Products on Private Subsidiary Farms of the Citizens" (1981). These documents brought the attention of the kolkhozes, sovkhozes, local party, soviet and agricultural agencies, and also ministries and departments to the need to render assistance to the population in keeping private subsidiary farms, for better utilization of the possibilities that exist here to increase the production of agricultural products.

There are now 34.8 million families with farmstead plots. They supply 99 percent of the families of kolkhoz workers and 81 percent of the families of other workers and employees who live in rural areas. The overall area of their land is 8.4 million hectares. Most of the farmstead plots (72 percent) are located in the land of the kolkhozes and sovkhozes.

Most of the people who use farmstead land have close ties with large agricultural enterprises, work in public production, and are interested in its results. Farmstead plots are also kept by workers and employees of other branches of the national economy, pensioners and other citizens. They engage in gardening and orchard raising mainly around their own homes, and some of them keep small livestock and poultry, using existing premises and food wastes for this.

The main legal and legislative document that regulates the use of private subsidiary farms by kolkhoz workers is the Model Charter of the Kolkhoz, adopted by the Third All-Union Congress of Kolkhoz Workers and approved by a decree of the CPSU Central Committee and the USSR Council of Ministers of 28 November 1969. The model charter of the kolkhoz specifies that the family of a kolkhoz worker can have its own residential building, farm structures, productive livestock, poultry, bees and minor agricultural supplies for work on their farmstead plots.

By a decision of a general meeting of the members of the kolkhoz, the kolkhoz family (kolkhoz household) is given a farmstead plot to be used for orchard raising, gardening and other needs which is up to 0.5 hectares in size, including land occupied by buildings, and up to 0.2 hectares of irrigated land. Its specific dimensions are established taking into account the number of members in the family and their labor participation in public production. According to the existing provisions, when there is compact building up of rural population points some of the farmstead plots are allotted near the residential buildings while others are beyond the residential zone of the population point.

The kolkhoz family can have one cow with young up to one year of age and one head of large horned cattle up to two years of age, one sow with young up to three months of age or two hogs on fattening, up to ten sheep and goats, bee colonies, poultry and rabbits.

By a decision of a general meeting of the kolkhoz members, the kolkhoz grants farmstead plots to teachers, doctors and other specialists who are working in rural locations and living on the territory of the kolkhoz. By a decision of the general meeting of kolkhoz workers, farmstead plots can be granted to workers and employees, pensioners and invalids who are living on the territory of the kolkhoz.

The utilization of farmstead plots of land for subsidiary farming by workers, employees and other citizens is regulated by legislation of the union republic.

The legislation has determined the policy for granting farmstead plots and their norms. In the RSFSR, for example, for permanent workers, specialists and employees of sovkhozes the farmstead plots are up to 0.30 hectares in size, and, depending on local conditions, they can be increased to 0.50 hectares. The average sizes of farmstead plots per family at the present time are as follows: kolkhoz workers--0.31 hectares, workers and employees--0.20 hectares and residents of cities and workers' settlements--0.10 hectares.

The main crops raised on the farmstead plots are potatoes and vegetables, and they occupy more than 70 percent of the planted areas. Approximately 1.2 million hectares of farmstead land are planted in perennial plantings and vineyards.

At the beginning of 1981 there were 23 million head of large horned cattle on the private subsidiary farms of the country's population, including 13.2 million head of cows, 14 million hogs, 30.1 million sheep and goats and 387.6 million head of poultry.

In the structure of the gross agricultural output produced on private subsidiary farms in 1980, approximately 40 percent was comprised of raising cattle and poultry, 17.7 percent--milk, 14.6 percent--potatoes, 13.1 percent--vegetables, melons, grapes and fruit and berry crops taken together, 6.4 percent--eggs and 1.6 percent--wool.

Some of the citizens of our country have collective gardens and orchards and there are fraternities of amateur orchard growers, rabbit breeders, animal breeders, flower growers and so forth.

At the present time the country has 24,000 orchard growing fraternities which include 4.1 million amateur orchard growers. Moreover, about 900,000 people have taken up this occupation in the last 3 years. There are 4.2 million workers and employees engaged in collective orchard growing. Each year they raise approximately 500,000 tons of fruits and berries, 200,000 tons of vegetables and about 2 million tons of potatoes in their collective gardens and orchards.

The labor expended in them at the present time is not so much of an economic as of a social significance. Workers and employees of industry and other branches of the national economy who are engaged, for example, in orchard growing, flower growing and gardening see in this the possibility of better utilizing free time and a place of recreation. According to data of the AUCCTU, about 15 million people take their recreation in collective orchards during the summer.

The main document that regulates the activity of orchard growing fraternities is the Standard Regulations of the Orchard Growing Fraternity of Workers and Employees. It is developed in keeping with legislation concerning the land utilization and is approved by the councils of ministers of the union republics. Based on local conditions, the various union republics solve problems concerning the size of the plot of land granted to the member of the fraternity, the area of orchard structures, and the quantity of poultry, rabbits and bee colonies that they can keep on the plots. But the general thing is the utilization of these plots for obtaining fresh vegetables, fruits, berries, potatoes and other agricultural products, and combining work in the orchard or garden with active recreation.

The land for collective orchards is granted to the enterprises and organizations in which the administration, in conjunction with public organizations, distributes it to its workers, employees and pensioners and organizes orchard growing fraternities. The orchard plot can be up to 600 square meters in size per family. The administration and the local trade union committee of the enterprise, organization or institution, within the limits of the rights and responsibilities for local land utilization established for collective orchard raising and gardening, renders the necessary assistance in the assimilation of the land, the construction of facilities, roads and so forth. The orchard growing fraternity receives the rights established by the regulation from the time of its registration with the rayon (city) soviet of people's deputies. It is a legal body which has an account in the USSR Gosbank or savings bank, a seal and a stamp and it forms funds from entry fees, membership fees and special fees.

The orchard growing fraternity has the right, in keeping with the draft for the organization of the territory of the collective orchard, to construct boarding houses, fruit storage facilities and other structures and installations for general use and to have apiaries. All the jobs in the collective orchard are done with the private labor of members of the orchard growing fraternity and members of their families, with the exception of work which requires specialists.

The affairs of the fraternity are managed by a general meeting (conference) and, during the period between general meetings, by a board elected at them which works under the guidance of the administration and the local trade-union committee, enterprise, institution or organization.

As distinct from collective orchard raising, plots of land for collective gardening are allotted to the enterprises, institutions and organizations for temporary use. This land is usually allotted from that which is on the territory of population points and also land of the state supply and the state timber land that is not intended for utilization in the next few years for building or other purposes. One can allot unutilized land for temporary agricultural purposes and the land of industrial, transportation and other nonagricultural enterprises, organizations and institutions.

Plots of land granted for collective gardening are used for raising vegetables, potatoes and melon crops. It is forbidden to build structures on these plots or to plant fruits or berries.

Existing legislation envisions the organization on a voluntary basis in cities, workers' settlements and other population points of animal husbandry fraternities of workers and employees. The production and financial activity of these fraternities takes place under the guidance of the city and rayon ispolkoms of soviets of people's deputies or village soviets.

In keeping with the established land codex, soviet agencies allot plots of land for grazing and haying and render assistance in acquiring breeding producers, bees, agricultural equipment and supplies, in providing premises that are necessary for the economic activity of the fraternity, and in organizing and conducting zooveterinary propaganda among members of the fraternity.

The main tasks of the animal husbandry fraternity are as follows: efficient utilization of assigned feed lands, existing technical equipment and other material supplies; the rendering of assistance to members of the fraternity in acquiring young livestock and improving their breeding qualities; the organization of grazing of livestock, the procurement of feeds, and zooveterinary service for the animals; the sale of surplus agricultural products; and the dissemination of the achievements of science and advanced work experience.

Certain bourgeois economists equate the existence of private subsidiary farms in the USSR with the private sector and try to prove that the so-called "private" sector in USSR agriculture is more effective than the public one. And these conclusions are drawn on the basis of the fact that farmstead land, which occupies 3 percent of all the planted area, provide for 25 percent of the gross agricultural output. Bourgeois propaganda is deliberately ignoring the fact that the private

subsidiary farm in our country is a derived form of socialist production and is radically different from private farming by its socio-economic nature.

The private subsidiary farm is a completely new phenomenon which has arisen on the basis of socialist production relations, and labor in it is characterized by the same features as in public production. This is precisely the main difference between it and relations that arise under conditions where private ownership of the means of production prevail.

Let us consider the main aspects that characterize socialist production relations that arise in the phases of production, distribution, exchange and consumption of the products of private subsidiary farms and their close ties with public production.

Utilizing land which is nationwide property and is granted not for ownership, but for use and within strictly limited amounts, the kolkhoz workers, other workers and employees cultivate it without enlisting hired labor. All expenditures involved in improving the technical crop condition of the land are paid by the state. The population also receives water free of charge. It is natural that in our country there is a somewhat token taxation of farmstead land. For example, on an average for the country the kolkhoz workers pay an agricultural tax of 76.8 kopecks per one hundredth per year.

The population is rendered the most appreciable assistance in the provision of feeds for livestock that are privately owned. Calculations show that kolkhoz workers, other workers and employees receive more than half of their feeds free of charge and the rest of them at the production cost on the kolkhozes and sovkhozes, or at prices that are much lower than state procurement prices. Even according to the most approximate evaluation, private subsidiary farms annually receive 5-6 billion rubles' worth of assistance from the kolkhozes and sovkhozes alone. Thus the private subsidiary farm cannot be regarded as isolated from public production and therefore it cannot be equated with private business.

Of course it is also true, as any objective economist understands, that calculating the amount of gross income from the private subsidiary farm under the conditions of our country is arbitrary. The income of the LPKh is primarily the result of the labor of kolkhoz workers, other workers and employees of the sovkhozes in the public sector, and the private subsidiary farm is essentially an integrated sector of the collective farm.

The possibilities of the private subsidiary farm are not limited to the production of agricultural products for themselves. The participation of the LPKh in the raising of livestock and poultry for the needs of the public farm is becoming more and more widespread. The essence of this cooperation consists in that the kolkhoz or sovkhoz concludes individual agreements with the population for raising a certain kind of cattle or poultry. On the basis of these agreements, the peasant farms are given young livestock, poultry and feed. The cattle and poultry that are raised to the weight stipulated by the agreement are purchased by the farm at state procurement prices. Contract discipline contributes to the introduction of new labor devices, highly productive breeds and hybrids of animals, small technical equipment and new technologies.

Such cooperation contributes to fuller utilization of labor resources in rural areas, especially of people with limited possibilities of working in public production (pensioners, adolescents, invalids and women). Approximately one-third of the work on private subsidiary farms is done by pensioners and other people with limited ability to work. This gives them a chance to participate actively in labor that is useful to society--to produce food products that are necessary to the family and to sell some of them, which in the final analysis contributes to increasing commodity resources.

The private subsidiary farm, being essentially a certain farm of home labor, is inextricably connected to the public economy. Therefore more extensive enlistment of the unemployed part of the population and people with limited ability to work in socially useful labor is an indispensable task of the kolkhozes, sovkhozes and political agencies of authority and administration.

The country has organized an extensive network of procurement organizations which collect and purchase products from the population. State and consumers' cooperatives buy up large quantities of surplus agricultural products from the private subsidiary farms. If necessary, the population sells some of them on the market. The state purchases products from the population at the same fixed prices as they do from the kolkhozes and sovkhozes. Private subsidiary farms are given appreciable assistance through the system of material incentives. Suffice it to note that as a result of increasing procurement prices on agricultural products alone that were sold in 1977 the population annually receives about 120 million additional rubles.

The country has created a network of well-equipped markets and places for storing products. The kolkhoz or sovkhoz gives its workers means of transportation for shipping products to the market. Some of the products that are sold by the population to the state or the consumers cooperatives are purchased on the spot.

The production and procurements of agricultural products from the population are planned and regulated by the state. The livestock, poultry and surplus milk that are purchased by the kolkhozes and sovkhozes in keeping with agreements with kolkhoz workers, other workers, employees and other citizens are sold by these farms to the state and these products are included in the production volume and in the fulfillment of the state plan for the procurement of agricultural products. The kolkhozes and sovkhozes are responsible for the state of affairs on the LPKh's in addition to the public farm. The state also plans and regulates trade at the markets. All this guarantees the population stability of production and sales of surplus products and contributes to rendering organizational assistance to the population in developing private subsidiary farming. Thus the continuation of socialist production relations is ensured on the private subsidiary farms. These relations are characterized by the absence of hired labor and its exploitation on LPKh's and new forms of organization that are inherent in the socialist economy.

In the current stage of their development the private subsidiary farms are displaying more and more features of collectivism. Collective gardens and orchards are being created, farmstead plots are being cultivated by groups, and joint procurement of feeds is being organized. Such phenomena are related to the application of modern technical means here and they demonstrate the high level of

collectivization of individual labor and the development of cooperative bases in private subsidiary farming. Various forms of socialist competition are becoming more and more widespread among the population engaged in subsidiary farming and also organizations that carry out functions of their regulation and the collection and procurement of surplus agricultural products.

One should also take into account the educational functions of the private subsidiary farm. By participating in them children and adolescents acquire skills for agricultural labor. Here it is possible to instill in them a love for the agricultural occupations. The private subsidiary farm also performs social health functions, primarily for people of pension age and people with limited ability to work in public production.

Today's kolkhoz and sovkhoz worker, educated under the conditions of collective labor, is a model of the conscientious Soviet citizen who has assimilated the high moral principles of our socialist state. The overwhelming majority of rural workers always place the interests of public production first. Working on a private subsidiary farm they strive to combine private and public interests as closely as possible.

Consequently the private subsidiary farm cannot be regarded as an independent economic unit and it certainly cannot be included in the private sector since its appearance and development not only originated with the public farm, but also depend on it.

Regarding the private subsidiary farm as one of the reserves for obtaining additional agricultural products, the party orients local party, soviet and agricultural agencies toward better utilization of the possibilities of the private subsidiary farm and collective garden and orchard raising as well as toward a concerned attitude toward them.

In order to obtain more crop growing and animal husbandry products from the LPKh's, it is necessary to organize them more intensively. This can be achieved primarily through the organization of more effective assistance to the population in cultivating the land of the farmstead plots, regularly updating the strains of agricultural crops that are being cultivated and providing agrochemical service; doing a better job of providing the citizens with young livestock and poultry, pasture, hayfields and other feeds; improving the breeding and productive qualities as well as the zooveterinary service for animals on private subsidiary farms; satisfying the population's need for minor agricultural supplies, packaging, seeds, planting materials and chemical substances; doing a better job of gathering, purchasing and selling surplus agricultural products and developing contractual relations among LPKh's, consumers' cooperatives and public production; and providing propaganda and information for the population concerning better utilization of innovations and advanced practice.

A great deal of assistance in performing these tasks can be rendered by kolkhozes, sovkhozes, executive committees of soviets of people's deputies, procurement organizations, rayon, oblast and republic administrative agencies and public organizations. Above all, one cannot allow the sections of land to go unused, to become overgrown with tall weeds and not produce products. Agronomists, zootechnicians

and veterinary workers should always be interested in the state of affairs on private subsidiary farms. They must continue to be responsible for violations of rules of agrotechnology in the orchards and gardens as well as sanitary and epidemiological requirements in animal husbandry. Special attention should be devoted to improving the strains of agricultural crops and the breeding of the animals. Demands should also be placed on trade organizations, which are largely responsible for the volumes of delivery of mixed feeds, mineral fertilizers, chemical means of plant protection and minor supplies to the retail network as well as for continuous trade in them.

Well organized socialist competition among the users of plots of land and among rural and village soviets of people's deputies and procurement workers can exert a large influence on improving the utilization of farmstead land and existing resources as well as increasing the production and sales of surplus products. In the figurative terms of Comrade L. I. Brezhnev, it is necessary "to create a certain social climate whereby the kolkhoz and sovkhoz workers will sense that by raising cattle and poultry at home they are doing a useful state job." (L. I. Brezhnev, "On a Leninist Course," Vol 7, pp 532-533).

Keeping a private subsidiary farm successfully depends largely on the managers of the kolkhozes and sovkhozes. Not all of them have the proper understanding of the needs of the kolkhoz workers and sovkhoz workers and employees when it comes to cultivating the farmstead plot, providing livestock, supplying feeds, pastures and hayfields or rendering other assistance to the LPKh.

The population has a large reserve for augmenting the feed supplies. This is primarily food wastes and some potatoes, vegetables, fruits and berries and other products that are not suitable for food purposes. There are also unutilized feed resources in ravines, the edges of forests, meadows and other places that are less suitable for the public herd. They should be taken into account and, the main thing, they should be used intelligently and efficiently.

Pastures are especially important for increasing the productivity of livestock on LPKh's. Approval should be given to the work of those managers of kolkhozes and sovkhozes who are concerned not only about the public livestock, but also about private livestock during the pasture periods. Everything should be thought out and planned ahead of time in this matter too. Many kolkhozes and sovkhozes of the country allot crop pastures and hayfields for the livestock of kolkhoz workers, other workers and employees. In addition to this, the banks, ravines, slopes and other land that is no longer in the crop rotation which is allotted for pastures are essentially improved and with the appropriate care become an important source of feeds.

It is also important to bring order into the pasturage of livestock. The kolkhozes and sovkhozes have the right to maintain pastures for livestock belonging to kolkhoz workers, other workers, employees and other citizens who are living on the territory of the farms, with the owners of the livestock making reimbursement for the expenditures involved in this. In certain regions of the country contingent counter delivery of mixed feeds has been organized for those who sell milk, meat and other products from private subsidiary farms.

One can contribute to the production of products on private subsidiary farms by expanding the organized sale to the population of piglets, chickens, planting material of fruit and berry crops, seeds and seedlings of vegetable crops and potatoes. It is also important to expand artificial insemination and improve the veterinary service for livestock on LPKh's.

The private subsidiary farms of the population, being one of the parts of public agricultural production, contribute to augmenting the country's food resources. In practice there are many good examples of taking advantage of the possibilities of the LPKh's. For example, the Sliznevskiy Soviet of People's Deputies in Arzamasskiy Rayon in Gor'kovskaya Oblast. The work for searching out possibilities of increasing the production and sales of agricultural products from LPKh's is done here in close contact with the boards of the Krasnyy pakhar' and Zarya kolkhozes and with the party and trade union organizations of these farms. The proposals of the deputies regarding questions of private subsidiary farming are considered at sessions of the rural soviet and gatherings in the population points. Concrete measures are earmarked for further development of private subsidiary farming. Thus in satisfying the requests of the citizens that were expressed at sessions and gatherings, the ispolkom of the rural soviet, the boards of the kolkhozes and the party and trade union organizations have begun to render all practical assistance in cultivating farmstead plots and repairing and constructing outbuildings, and they have begun to allot construction materials, labor force and transportation for these purposes. It has been suggested that zooveterinary workers treat animals on LPKh's and give them preventive care along with the livestock of the public farm. All zooveterinary workers have been assigned to each population point. On the recommendation of the rural soviet the boards of the kolkhozes decided to allot special grazing areas on crop pastures for the livestock of the kolkhoz workers and to expand the sale of piglets and chickens to the population. In 1980 alone the kolkhozes sold the population about 3,000 piglets and fully satisfied the needs of the LPKh's for young chickens. The measures that have been taken have contributed to increasing the number of livestock and poultry and increasing the production and sales of agricultural products. In 1980 as compared to 1975 the volume of sales of meat by the population increased by 18 percent, milk--by 32 percent and potatoes--2.7-fold.

On the Stayki Sovkhoz in Vileyskiy Rayon in Minskaya Oblast up until 1977 the farmstead land was cultivated primarily with horses and with manual labor. This led to large expenditures of manual labor. For example, labor expenditures per one hectare where potatoes were cultivated amounted to 126 man-days, and for the entire area--24,400 man-days. The sovkhoz took measures to provide mechanized cultivation of the farmstead land, which made it possible to considerably reduce time periods for planting and harvesting, to improve the quality of the work, to reduce labor expenditures and to increase productivity significantly. At that time the planting and harvesting of potatoes on LPKh's were basically done in 7-10 working days, the annual savings on labor amounts to 12,300 man-days, and the productivity of the potatoes increased 1.3-fold. Now each sovkhoz worker who is cultivating a farmstead plot saves an average of 21 man-days a year.

The Malo-Belozerskiy rural soviet in Vasil'yevskiy Rayon in Zaporozhskaya Oblast has accumulated positive experience in efficient utilization of the land. By a

decision of the soviet of people's deputies they accounted for all the unutilized land. Then in the village itself they discovered 570 hectares of unutilized farmstead land, and on the territory of the farms under the jurisdiction of the rural soviet--4,400 hectares. Among them were: 2,400 hectares of sections of land from farmstead plots; 1,300 hectares of steep slopes, ravines and gullies; and 200 hectares of wasteland. This land is being recultivated and planted. At the present time more than 900 hectares of previously unutilized land have been turned over to the population.

The experience of the Belorussian SSR and the Baltic republics in locally procuring products from the population is worthy of attention. The organization of the gathering of milk sold by the population in these republics is carried out by the rayispolkoms in conjunction with the ispolkoms of rural and village soviets of people's deputies, inspection teams for procurements and quality of agricultural products, and the administration of the dairy combines. They develop and approve a special plan of measures for procuring milk from the population and conduct extensive mass explanatory work. The people bring their products to the roadsides at the appointed time and leave them on special stands. Specially appointed people gather the milk and transport it daily over a previously established route and then deliver it to the receiving points.

These organizations themselves discover and take into account ahead of time the approximate volume of surplus products in terms of the time and the kinds. The population points open permanent or seasonal receiving-procurement points which operate during hours that are convenient for the suppliers of products and they familiarize the population with the standards, price lists and so forth.

One of the important reserves for increasing the collection of products, as practice shows, lies in fuller utilization of the possibilities of the farms that are located in remote regions. And success is achieved here when the procurement worker goes to each population point, where the appropriate contact is established with the population.

The consumers' cooperatives of Penzenskaya Oblast are doing positive work for procuring surplus agricultural products from LPKh's. In order to increase the procurements of products from the population, the oblast consumers' union has organized barter sale of goods that are in short supply to the population. All the measures that are being taken in the oblast to increase the capabilities of the LPKh's belonging to the population are announced through the mass media, and wall newspaper advertising is also utilized extensively.

Each rayon cooperative organization is notified of the plans for the procurement of products. In order to raise the level of substantiation of the procurement plans for the various rayon organizations and also to supervise the activity of organizations in the oblast consumers' union, preliminary calculations are made of the possible volume of commodity resources of agricultural products on private subsidiary farms during the year being planned. A great deal of significance is attached to the conclusion of individual agreements with the suppliers of the products. Contractual interrelations make it possible for the consumers' cooperative to predict more precisely the volumes and the time periods for the procurement of

agricultural products and to plan the work of the procurement network and material and technical support for the organization of the collective of products. This is convenient for the population in that it guarantees the acceptance of the products that have been raised.

As a result of the large amount of organizational work and the well-arranged contractual ties between the consumers' cooperatives and the population, in Penzenskaya Oblast the LPKh's now deliver 73 percent of the potatoes, 43 percent of the eggs, 42 percent of the milk and 31 percent of the meat that is consumed in the oblast.

The experience in serving LPKh's that has been accumulated in Minskaya Oblast is extremely promising. In a number of rayons of this oblast, there are specialized autonomously financed subdivisions for serving private subsidiary farms, whose main task consists in rendering assistance to the population in the cultivation of farmstead land, caring for the planted areas, harvesting the crop, and constructing and repairing residential and business buildings. Such a subdivision is operating successfully, for example, in Stolbtsovskiy Rayon in Minskaya Oblast. It includes carpenters, sanitary technicians, bricklayers, stove repairmen, electric gas welders, fitters, machine operators and manual laborers who work with horses. Seasonal workers are extensively enlisted for servicing the LPKh's.

The payment for the work that is done is made strictly according to the orders through the accounting office of the enterprise. The specialized subdivision for serving the LPKh's keeps track of the orders that come in from the population, and on the basis of these determines the amount of work and the time periods for doing it. This subdivision's work plan is approved by the kolkhozes, sovkhozes and ispolkoms of the rural soviet. They are also responsible for functions of control of the fulfillment of the plan. The volume of services rendered to the population in Stolbtsovskiy Rayon is constantly increasing. While in 1976 38,000 rubles' worth of services were rendered to rural residents, in 1980 this figure was 102,000 rubles.

The experience that exists in developing private subsidiary farming and utilizing progressive forms of collecting and procuring surplus agricultural products from the population shows the great possibilities the LPKh has for increasing the production and sales of agricultural products. It is important to continue the work for multiplying these possibilities, for strengthening the integration of public and private subsidiary farming, efficiently utilizing the labor in these spheres of production and improving methods of administration.

The main economic role of the private subsidiary farm in solving the food problem will continue in the future to be the production of meat, milk, eggs, potatoes, vegetables, fruits and certain other products, mainly those consumed by the rural population itself. Private consumption and expenditures related to keeping LPKh's now account for two-thirds of the meat and vegetables, 86 percent of the milk, 86.5 percent of the eggs and 80.3 percent of the potatoes produced on LPKh's. According to existing evaluations, the production of the main agricultural products on LPKh's will remain within the same volume range in the future. Because of the increased public production, the proportion of the LPKh in the overall volume of production of agricultural products will constantly decrease, as it has in preceding years.

The development of the private subsidiary farm corresponds to the party's course towards fuller and more efficient use of existing resources. Under the conditions of the crucial demographic situation, labor resources are most important. We are speaking primarily of those people whose employment in public production is difficult for a number of objective reasons (pensioners, housewives and others). In the future the LPKh will retain its significance for them as an important sphere for the application of labor.

It is known that further expansion of the production of labor-intensive products is limited until production is fully changed over to an industrial basis because of the shortage of labor force in the public economy. Therefore the utilization on the LPKh's of the labor of people with limited ability to work for the production of these products for public needs is directly related to solving the food problem.

Having certain resources, the private subsidiary farm also has extensive possibilities of utilizing land that is "inconvenient" for the application of industrial methods of work. Suffice it to note that just the land used for grazing private livestock and procuring coarse and green feeds provides approximately 30-35 million tons of feed units that are used on the LPKh's.

Fuller utilization of other feed resources by the population is also of some importance. For example, because of the specific nature of rural distribution of population it is difficult to collect and utilize food wastes in public production. Yet about 5 million tons of feed units from these wastes are annually used on the private subsidiary farms for feeding livestock. It is no accident that less expensive feed accounts for the majority of that used on private subsidiary farms. The population uses considerably less concentrated feed.

The production of products on LPKh's typically has low proportional capital expenditures. This production in the public economy would require large capital investments and additional material and labor resources. Because of this the kolkhozes and sovkhozes have great opportunities to direct these resources to the development of the decisive branches of production.

Agricultural workers and party, soviet and agricultural agencies of the country are doing a large amount of work to implement the historic decisions of the 26th CPSU Congress and the November (1981) Plenum of the CPSU Central Committee for further development of public production of the kolkhozes and sovkhozes. At the same time it is bringing in the reserves of the private subsidiary farm, collective orchard growing, gardening and animal husbandry which are an essential support in providing the population with food.

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# ZONALLY ADAPTED SYSTEM OF SOIL TILLAGE IN KUYBYSHEVSKAYA OBLAST

Saratov STEPNYYE PROSTORY in Russian No 12, Dec 81 pp 16-18

[Article by G. I. Kazakov, candidate of agricultural sciences, and Ye. L. Kosolapov, candidate of technical sciences (Kuybyshev Agricultural Institute): "Zonal Systems of Soil Cultivation in Kuybyshevskaya Oblast"]

[Text] Beginning in 1969 in the forest steppe, transitional and steppe zones of Kuybyshevskaya Oblast, with various conditions of forestation of the territory, the farming faculty of the Kuybyshev Agricultural Institute created experimental fields for studying various systems of soil cultivation in field crop rotations with rotation of the crops: clean and occupied fallow, winter wheat, spring wheat, corn for silage, spring wheat and barley.

The main permanent station was located in southern part of the forest steppe of the trans-Volga area (Kinel'skaya selection station) on ordinary, heavy clay loam, medium textured chernozem soil with an 8.3-percent content of humus in the plowed layer. The average annual total precipitation here is 410 millimeters and the forestation of the territory is more than 12 percent. The experimental field is bordered by old forest strips with distances between them of 450 meters in width and 1,000 meters in length. The local relief is level, with a slope of 1.5 degrees from north to south.

From 1966 through 1975 they studied three systems of soil cultivation: 1) the generally accepted blade tilling to a depth of 28-30 centimeters for fallow and row crop fields, and to 20-22 centimeters for the rest of them (control); 2) blade tilling to a depth of 20-22 centimeters for all crops of the crop rotation; 3) subsoil tilling for fallow and row crop fields to a depth of 28-30 centimeters, and 12-14 centimeters for the rest of them.

The spring and summer tillings and plantings for the various variants were carried out with the appropriate set of soil cultivation implements and seeders. During one and a half rotations of the grain-fallow-row crop and grain-row crop crop rotations the most effective in terms of its influence its influence on the productivity of agricultural crops was the blade tilling of the soil to varying depths (see Table 1).

Plowing to a depth of 20-22 centimeters for all crops of the crop rotation and subsoil tilling to various depths during years that were average and favorable in terms

of precipitation reduced the productivity of the experimental crops, which on the whole led to a certain underharvesting of grain and feed units per one hectare of crop rotation area as compared to the control variant. But in dry years (1967, 1969 and 1975) the productivity of the grain crops (spring wheat and barley) was higher by 1.5-2 quintals per hectare with subsoil tilling.

Table 1. Yield of Agricultural Crops, Depending on Systems of Soil Cultivation in Crop Rotation (Experimental Field in Forest Steppe Zone) Average for 1970-1975, Quintals per Hectare

| Crops | Variants in crop rotation with clean fallow | | | Variants in crop rotation with occupied fallow | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Peas | -- | -- | -- | 18.8 | 17.6 | 19.4 |
| Winter wheat | 28.4 | 27.8 | 27.8 | 23.6 | 22.7 | 23.3 |
| Spring wheat | 17.2 | 16.9 | 27.8 | 23.6 | 22.7 | 23.3 |
| Corn for silage | 275 | 267 | 267 | 263 | 252 | 268 |
| Spring wheat | 20.0 | 19.9 | 19.8 | 19.9 | 19.5 | 18.4 |
| Barley | 24.5 | 23.9 | 23.7 | 23.9 | 23.8 | 22.6 |
| | Average annual harvest from 1 hectare of crop rotation | | | | | |
| Grain | 15.0 | 14.7 | 14.6 | 17.3 | 16.8 | 16.8 |
| Feed units | 30.7 | 20.0 | 29.8 | 33.7 | 32.4 | 33.0 |

Beginning in 1976 they added the following systems of soil cultivation to these crop rotations and began to study them: 1) the generally accepted blade tilling for fallow and corn to a depth of 28-30 centimeters, and for the remaining crops, to a depth of 20-22 centimeters (control); 2) combined tilling to the same depth, which in the control variant 2 consists of subsoil tilling for fallow and grain crops and blade tilling for corn; 3) surface tilling with subsoil tillers to a depth of 10-12 centimeters for grain crops and 28-30 centimeters for corn; 4) surface tilling with disk implements to a depth of 10-12 centimeters for all crops; 5) no tilling for any crops where the plots were treated in the autumn only with the 2.4-D herbicide in a dose of 5 kilograms per hectare.

In the spring on sections that were cultivated in the autumn with subsoil tillers, disk implements and herbicides, the moisture was retained with a BIG-3 needle harrow, surface cultivations with subsoil tillers, and planting with an SZS-2.1 seeder.

The methods and depths of cultivation of bare autumn fallow did not exert a marked influence on the productivity of winter wheat, but the yield of spring wheat planted after winter wheat increased somewhat with subsoil tilling to a depth of 20-22 centimeters (see Table 2). Corn grew and developed worse with subsoil and especially zero cultivation. Spring wheat planted after corn had greater productivity with blade plowing as compared to other kinds of cultivation, which is explained by the fact that the corn stubble remaining after harvest was plowed into the soil better and there were more favorable conditions for planting the seeds of spring wheat.

But in an overall evaluation of the systems of soil cultivation in the crop rotations, as in their first rotations, plowing to varying depths turned out to be the most effective in terms of the yield of grain and feed units per hectare of the crop rotation area. This is explained mainly by the fact that the location of the experimental field, the forestation of the surrounding territory and the existence of forest strips around the field create equal conditions for snow accumulation here. In the spring the plowed fallow absorbs the melted snow more rapidly than does subsoil tilled, surface tilled and especially non-tilled fallow, since it frequently leads to greater accumulation of moisture in the soil and determines the amount of the yield under our arid conditions. With subsoil, disk and zero cultivations, and especially in the grain-row crop crop rotation, there were more weeds and their dry weight was greater.

Table 2. Yield of Agricultural Crops, Depending on Systems of Soil Cultivation in Crop Rotations, Average for 1977-1980

| Crops | Variants in crop rotation with clean fallow | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Peas | -- | -- | -- | | |
| Winter wheat | 29.7 | 29.7 | 30.9 | 29.3 | 29.8 |
| Spring wheat | 21.4 | 21.7 | 21.4 | 20.7 | 19.1 |
| Corn for silage | 264.7 | 257.7 | 233.7 | 220.7 | 199.5 |
| Spring wheat | 22.8 | 19.8 | 20.0 | 18.7 | 19.1 |
| Barley | 26.8 | 27.9 | 27.2 | 26.6 | 26.0 |
| Average annual harvest from 1 hectare of crop rotation | | | | | |
| Grain | 16.8 | 16.5 | 16.4 | 15.8 | 15.6 |
| Feed units | 30.3 | 29.7 | 28.7 | 27.5 | 26.4 |

| Crops | Variants in crop rotation with occupied fallow | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Peas | 20.7 | 21.4 | 19.5 | 18.8 | 18.4 |
| Winter wheat | 24.5 | 28.7 | 23.4 | 23.9 | 22.8 |
| Spring wheat | 21.0 | 21.7 | 19.8 | 19.2 | 18.9 |
| Corn for silage | 264.7 | 249.5 | 221.5 | 298.7 | 201.5 |
| Spring wheat | 21.8 | 19.9 | 19.3 | 18.3 | 18.1 |
| Barley | 28.1 | 27.1 | 25.6 | 25.9 | 26.5 |
| Average annual harvest from 1 hectare of crop rotation | | | | | |
| Grain | 19.3 | 19.0 | 17.9 | 17.7 | 17.4 |
| Feed units | 33.3 | 32.2 | 29.9 | 28.7 | 28.5 |

The volume weight, heaviness and structure of the soil and also the nutritive substances in it and their distribution in the plowed layer changed with the various

kinds of cultivation that were studied within a small range that did not affect the growth and development of the experimental crops.

On another experimental field located in the transitional part of the forest steppe and steppe zone of Kuybyshevskaya Oblast (Kolkhoz imeni Lenin in Kenil'Cherkasskiy Rayon) where the average annual quantity of precipitation is 385 millimeters, the forestation of the territory is less than 10 percent and the forest strips are 2-5 kilometers apart from one another and the soil of the experimental station is ordinary, average texture, heavy clay loam chernozem with a humus content of 7 percent in the plowed layer, different results were obtained for the effectiveness of soil cultivation systems in the crop rotation.

Here, beginning in 1972, in a field grain-row crop crop rotation they studied the following systems of soil cultivation: 1) the generally accepted blade tilling as in the first experimental field (control); 2) blade tilling with minimalization, where in the autumn they plowed the crop to the same depths as in the control variant but with post-harvest loosening and treatment with 2.4-D herbicide in a dose of 5 kilograms per hectare. In the spring, after harrowing, they conducted the planting with an SZS-2.1 seeder, combining cultivation, planting and rolling. The spring cultivation of the soil for corn and its planting were done by the generally accepted methods in the zone; 3) subsoil tilling for all crops of the crop rotation to a depth of 28-30 centimeters for fallow and corn, and 12-14 centimeters for the other fields. The spring and summer surface cultivations and plantings were conducted with the appropriate soil cultivation implements and feeders; 4) zero autumn and surface spring-summer cultivation was distinguished from the subsoil (third variant) by the fact that in the autumn the sections were treated only with 2.4-D herbicide in a dose of 5 kilograms per hectare.

Research showed that reducing the number of cultivations and combining operations (variant 2) had practically no effect on the volume mass of the plowed layer of the soil. There was a small increase within permissable limits with subsoil and zero cultivations. Then the heaviness of the soil was 30 and 50 percent higher, respectively, than in the control section.

There was a certain improvement of the structural qualities of the soil with subsoil and zero cultivations as compared to the control section.

Leaving the stubble on the surface contributed to an earlier formation of a heavy snow cover and improvement of the water conditions of the soil with subsoil cultivation, especially in dry years. And with zero cultivation there was less moisture in the soil, which is explained by the fact that it is more difficult for the water to penetrate into the soil in the spring. But there was no marked difference in the moisture content of the soil in the fields of the crop rotation with the generally accepted blade system and blade tillage with minimalization.

In the grain-fallow part of the crop rotation refraining from spring cultivation and applying subsoil tilling when turning over the fall fallow reduced the weediness of the winter and spring wheat. But as years passed and the cultivated crop was further removed in time from the clean fallow, the weediness of the planted areas against a background of subsoil tilling and especially zero tilling increased appreciably.

The best water conditions of the soil and the least weediness of the planted areas ensured reliable additions to the grain yield of winter and spring wheat from subsoil tilling (see Table 3). But its application to corn turned out to be less effective than the control variant, which is explained by the greater amount of weeds and the greater density of the soil.

Table 3. Yield of Agricultural Crops, Depending on System of Soil Cultivation in Crop Rotation (Experimental Field in Transitional Zone), Average for 1972-1978, Quintals per Hectare

| Crops | Variants of Experiment 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Winter wheat on clean fallow | 19.6 | 20.1 | 23.0 | 20.5 |
| Spring wheat | 18.7 | 18.6 | 20.0 | 20.5 |
| Corn for silage | 215.8 | 195.6 | 155.6 | 146.9 |
| Spring wheat | 19.0 | 18.4 | 19.3 | 16.2 |
| Barley | 24.7 | 23.3 | 23.9 | 20.0 |
| Average annual yield from 1 hectare of crop rotation | | | | |
| Grain | 13.7 | 13.4 | 14.4 | 12.2 |
| Feed units | 24.6 | 23.5 | 23.1 | 20.3 |

On sections where there was no fall fallow cultivation of the soil the yield of spring wheat, barley and corn for all the years was less than in the control group, and the difference became more appreciable with each year. Thus while at the beginning of the experiment the yield of green mass of corn was approximately the same in all variants, in the third year it had decreased by 31 percent, and in the sixth year--by 76 percent.

Even greater differences in the yields of agricultural crops depending on the systems of soil cultivation were observed in the steppe zone of the Kuybyshev trans-Volga area. Here in the region where the experimental field was located (Utevskiy Sovkhoz in Neftegorskiy Rayon) the average annual quantity of precipitation is 345 millimeters, the forestation of the territory is less than 5 percent, and the forest strips are 5-7 kilometers away from one another.

The soil on the section is ordinary average texture heavy clay loam chernozem with a humus content in the plowed layer of 7 percent, and the land is level.

In the field grain-row crop crop rotation here they studied various systems of soil cultivation: 1) the generally accepted blade tilling to variable depths (control); 2) subsoil tilling to 28-30 centimeters for fallow and row crop fields, and 20-22 centimeters for the rest of them; 3) combined to the same depth as in the first two variants with subsoil tillers, but with only plowing of the corn. Spring and summer surface cultivation of the soil and planting in the various variants were carried out with the appropriate set of soil cultivation implements and seeders.

Here during a rotation of the crop rotation the greatest effect was obtained from applying combined and subsoil systems of soil cultivation to the generally accepted depths (see Table 4). This is explained by the more arid conditions of the open

territory, the lack of forests and the sparse distribution of forest strips, where the stubble remaining on the field provides better conditions for snow accumulation and improved water conditions of the soil compared to the variants with blade plowing.

Table 4. Yield of Agricultural Crops, Depending on System of Soil Cultivation in Crop Rotation (Experimental Field in Steppe Zone), Average for 1970-1975, Quintals per Hectare

| Crops | Variants of Experiment 1 | 2 | 3 |
|---|---|---|---|
| Winter wheat on clean fallow | 12.3 | 12.3 | 12.2 |
| Spring wheat | 10.9 | 12.9 | 13.5 |
| Corn for silage | 112 | 122 | 126 |
| Spring wheat | 10.1 | 12.9 | 12.8 |
| Barley | 14.0 | 18.4 | 18.0 |
| Average annual yield from 1 hectare of crop rotation | | | |
| Grain | 7.9 | 9.4 | 9.4 |
| Feed units | 13.7 | 16.1 | 16.1 |

And in this experiment they also noted fewer weeds on the areas planted in winter and spring wheat with subsoil tilling in the grain-fallow part of the crop rotation, while in the grain-row crop part, conversely, there were more of them than with blade plowing.

Thus the experiments showed that in the forest steppe zone of the Kuybyshev trans-Volga area on heavy textured soil with forestation of the territory of more than 10 percent and the forest strips located close together the most effective system of soil cultivation in the field crop rotations blade tilling to varying depths: for fallow and row crop fields--to 28-30 centimeters, and for the rest of them--to 20-22 centimeters.

But in the transitional zone, and especially in the steppe zone with open fields, the combined system is still the most advantageous, that is, subsoil tilling for grain crops to a depth of 20-22 centimeters with one blade plowing of row crops to 28-30 centimeters.

At the present time the farms of the northern forest steppe zone of Kuybyshevskaya Oblast use mainly blade tilling of the soil. And only on sandy and sandy loam soil and also on very sloping land is it recommended to use subsoil tilling and other kinds of anti-erosion cultivation. But many of the farms of the transitional and steppe zone of the oblast do subsoil tilling of the soil for grain crops. Under the Eleventh Five-Year Plan they will cover 450,000 hectares.

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## EFFECTIVENESS OF APPLYING COMPOUND FERTILIZERS TO OATS IN BASKIRIYA

Saratov STEPNYYE PROSTORY in Russian No 1, Jan 82 pp 15-16

[Article by N. A. Khazipova, scientific worker of the agrochemical division of the Bashkir Scientific Research Institute of Agriculture: "The Effectiveness of Applying Compound Fertilizers to Oats"]

[Text] This article gives the results of field experiments for studying the effectiveness of nitroamoophos (NAF) and nitroammophoska (NAFK) as compared to urea, double granulated super phosphate and an equivalent mixture of these fertilizers with preplanting application to oats of the Astor strain. The research was conducted on leached chernozem soil of the southern forest steppe of the Bashkirskaya ASSR (Ufimskoye experimental farm of the Bashkir Scientific Research Institute of Agriculture). The plowed layer of the soil contained 10.10 percent humus, mobile phosphorus--7.8, and exchangeable potassium--9.0 milligrams per 100 grams of soil. The fertilizers were applied with SUK-24A grain fertilizer seeder.

The meteorological conditions varied during the years when the research was conducted. In 1976 the total effective temperature and quantity of precipitation were close to the average for many years. The year 1979 was distinguished by greater temperature fluctuations at the beginning of the plants' growing period and irregular distribution of precipitation while in 1978 the effective temperatures were less.

The figures from the observations showed that the field germination of the oats seeds during all the years of the research on fields with fertilization were higher than on those that were unfertilized. Moreover the most effective turned out to be NASK.

Subsequently, the compound fertilizers contributed to improved growth and development of the plants. In these variants the plants developed a more leafy surface which was the main aspect of the photochemical reactions in which substances are formed that comprise the basic and most valuable part of the yield. Thus on an average for 1976-1978 in the tasseline phase the area of the leaves in the control group was 23,600 square meters per hectare, in the variant with $N_{20} + P_{20}$--32,300, and NASK $(NPK)_{20}$--32,900 square meters per hectare.

The nutrition conditions affected not only the formation, but also the functioning of the leaf system. A determination of the average intensiveness of photosynthesis

during the growing period showed that the fertilizer mixture ($N_{20} + P_{20}$) and compound fertilizers had the same effect on this amount. The photosynthetic potential increased by 0.3 square meters per hectare per day as compared to the control fields.

The greater leaf system and the high intensiveness of photosynthesis in the fertilized variants contributed to the formation of a larger grain yield (see Table 1). On an average for three years (1976-1978) the additional yield of grain from NASK amounted to 5.5 quintals per hectare, from an equivalent mixture of urea and super phosphate ($N_{20} + P_{20}$)--4.1 quintals per hectare, with the yield from the control variant being 36.4 quintals per hectare. Such large yields in the unfertilized variant are explained by the fact that the soil at the Ufimskoye experimental farm is fairly well cultivated. The application of NAS $(NP)_{20}$ also provide for a reliable additional yield--3.6 quintals per hectare as compared to the control variant.

The increased yield from the fertilized variants took place as a result of the great productive bushiness, the number of kernels in the tassel and the weight of 1,000 kernels.

Table 1. Effectiveness of Simple and Compound Fertilizers on Oats (Average for 1976-1978)

| Variants | Yield, quintals per hectare | Additional yield, quintals per hectare | Value of additional yield, rubles per hectare | Conventional net income, rubles per hectare | Return from 1 ruble of expenditures, rubles |
|---|---|---|---|---|---|
| No fertilizer | 36.4 | --- | --- | --- | --- |
| $N_{20}$ | 36.9 | 3.5 | 28.4 | 23.8 | 5.1 |
| $P_{20}$ | 39.9 | 3.5 | 28.4 | 24.1 | 5.6 |
| $N_{20} + P_{20}$ | 40.5 | 4.1 | 33.2 | 24.3 | 2.7 |
| NAF $(NP)_{20}$ | 41.0 | 4.6 | 37.3 | 31.2 | 5.1 |
| NAFK $(NFK)_{20}$ | 41.9 | 5.5 | 44.6 | 34.2 | 3.3 |

It was revealed that various forms of mineral fertilizers had various effects on the content of crude protein. Nitroammophoska, as distinct from urea and super phosphates (both with individual and combined application of them) provided for a greater increase in the protein content in the grain. While its content in the control variant was 9.29 percent, with the application of $N_{20} + P_{20}$ it was 9.46 percent, and in the variant with NAFK it was 9.63 percent. In terms of its effect on the content of crude protein the fertilizer mixture was the same as the nitroammophos.

The different effects of various kinds of fertilizers on the yield and protein content were also reflected in the gross harvest. The maximal yield of crude protein (403.5 kilograms per hectare) was obtained with the application of NAFK.

The indicator of the economic effectiveness of compound fertilizers with row application to oats on leached chernozem soil was higher than that for the use of an equivalent mixture of simple fertilizers. Thus the conventional net income for

NAF was 31.2 rubles per hectare, NAFK -- 34.2, and the fertilizer mixture ($N_{20}+P_{20}$) -- 24.3 rubles per hectare. The return per 1 ruble of expenditures was 5.1, 3.3 and 2.7 rubles, respectively.

Table 2. Effectiveness of Various Doses of Nitroammophos Applied to Oats (1980)

| Variants | Yield, quintals per hectare | Additional yield | | Conventional net income | Return per 1 ruble of expenditures, rubles |
|---|---|---|---|---|---|
| | | quintals per hectare | % | | |
| No fertilizer | 30.8 | -- | -- | -- | -- |
| NAF $(NP)_{10}$ | 31.7 | 0.9 | 2.9 | 4.2 | 0.55 |
| NAF $(NP)_{20}$ | 34.1 | 3.3 | 10.7 | 20.6 | 2.37 |
| NAF $(NP)_{30}$ | 34.6 | 3.8 | 12.0 | 21.6 | 1.34 |

In order to refine the optimal norm for the application of nitroammophos, in 1980 the Ufimskoye experimental farm conducted a production experiment. The data in table 2 show that with the application of NAF $(NP)_{10}$ the grain yield increased by 0.9 quintals per hectare, NAF $(NP)_{20}$ -- by 3.3, and NAF $(NP)_{30}$ -- by 3.8 quintals per hectare, with the yield in the control variant being 30.8 quintals per hectare. The greatest conventional net income was obtained with the application of NAF $(NP)_{30}$, but the return per 1 ruble of expenditures decreased appreciably with this variant.

Thus, under the conditions of the forest steppe of the southern part of the Bashkirskaya SSR, Nitroammophos and nitroammophoska, when applied during planting to oast in a dose of 20 kilograms of $P_2O_5$, surpass an equivalent mixture of urea and superphosphate in terms of their effects on the yield and the quality of the grain of the oats.

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# EFFECTS OF PREPLANTING FERTILIZATION ON BARLEY YIELD IN KUYBYSHEVSKAYA OBLAST

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[Article by V. T. Moskovskikh, candidate of agricultural sciences, and V. A. Proshkin, candidate of agricultural sciences (Kuybyshev Scientific Research Institute of Agriculture): "Effects of Preplanting Fertilization on Barley Yield"]

[Text] Barley occupies an important place in the structure of grain crops in Kuybyshevkaya Oblast (34.5 percent of all of the planted area). It is used extensively both for feed and as raw material in the food and processing industry. The many years of practice of farmers of the trans-Volga area show that in steppe regions of the zone, with correct agrotechnology the barley produces large and stable yields. Efficient utilization of fertilizers is a very important part of the complex of agrotechnical measures that contribute to increasing its productivity. But, as a rule, they are not applied. Only in a few cases is barley cultivated in the presence of the aftereffects of fertilizers. And this is not significantly reflected in the yield. On an average for five years (1975-1979) the additional yield of barley from the aftereffects of mineral fertilizers applied in the grain-row crop crop rotation (fallow, winter rye, spring wheat, corn, barley) to two crops--winter rye and corn (total dose $N_{120}P_{120}K_{120}$)--was 1.5 quintals per hectare or 8.5 percent of the amount from the control fields. Moreover in individual years it did not exceed 0.4-0.7 quintals per hectare. The aftereffects of 20 tons per hectare of manure applied in the crop rotation to winter rye was even less significant. On an average for 1975-1979 the additional yield did not exceed 0.3 quintals per hectare or 1.6 percent of the yield from the control fields. With a combination of 20 tons per hectare of fertilizer to winter rye and mineral fertilizers (total dose $N_{60}P_{60}K_{60}$) the aftereffects on the yield of barley were not great either. On an average for 1975-1979 the additional yield amounted to 1.7 quintals per hectare or 9.1 percent of the amount obtained from the control fields.

Therefore one can consider one of the reasons for the poor productivity of barley to be the inadequate utilization of fertilizers on preseeding crops and the almost complete lack of them acting directly on this crop.

During the years of the Tenth Five-Year Plan the average yield of barley in rayons of the steppe zone of the oblast amounted to 11.3 quintals per hectare.

When utilizing fertilizers on barley and other agricultural crops one must keep in mind that their effectiveness under the arid steppe conditions of the trans-Volga rayons with nonirrigated land depends significantly on the quantity of precipitation and increases appreciably when the fertilizers are applied in the autumn before planting with a plow. Therefore it is of scientific and practical interest to study the effectiveness of the main fertilizer on barley, depending on weather conditons. The influence of the weather on the effectiveness of the basic fertilizer to barley was studied in 1970-1980 in field experiments on the experimental field on the Kuybyshev Scientific Research Institute of Agriculture.

The soil was terraced ordinary heavy clay loam chernozem. In the layer from 0-20 centimeters the humus content was 5.0 percent, easily hydrolized nitrogen (according to the Tyurin and Kononova method)--11.26 milligrams, $P_2O_2$ (according to the Chirikov method)--14.08 milligrams, and exchangeable potassium (according to the Maslova method)--29.8 milligrams per 100 grams of soil.

The barley (in 1970-1978--the Nutans 187 strain; in 1979-1980--the Donetskiy 8) was planted at the optimal agrotechnical time. The fertilizer (ammonium nitrate, simple superphosphate and 4-percent potassium salt) were applied during plowing of the fallow.

During the years of the research the agrometerological indicators during the growing period of the barley differed appreciably (see Table 1) which, in turn, was reflected in the yield of grain (see Table 2).

Table 1. Agrometerological Indicators During Growing Period for Barley in Years of Research

| Years | Total precipitation mm | Total precipitation % of norm | Average temperature, °C | Total strong dry winds |
|---|---|---|---|---|
| | | Dry years | | |
| 1972 | 44.7 | 38 | 19.4 | 24 |
| 1975 | 63.9 | 55 | 20.6 | 27 |
| 1980 | 79.9 | 69 | 18.2 | 7 |
| | Years with average amount of moisure | | | |
| 1970 | 122.6 | 106 | 18.0 | 7 |
| 1971 | 130.8 | 112 | 17.8 | 0 |
| 1979 | 150.3 | 129 | 18.3 | 18 |
| | Years with greater quantity of precipitation | | | |
| 1973 | 226.5 | 195 | 17.8 | 0 |
| 1974 | 211.4 | 182 | 18.0 | 4 |
| 1976 | 203.0 | 175 | 16.4 | 1 |
| 1978 | 191.9 | 165 | 16.1 | 1 |
| Average for years | 116.2 | 100 | 18.6 | 9 |

Table 2. Effectiveness of Mineral Fertilizers on Barley in Years With Varying Amounts of Moisture

| Years | Yield, quintals per hectare: Without fertilizer | $N_{30}P_{30}K_{30}$ | Additional yield quintals per hectare | % | R, % | $NSR_{0.95}$ quintals per hectare |
|---|---|---|---|---|---|---|
| | | | Dry years | | | |
| 1972 | 15.7 | 19.9 | 4.2 | 26.7 | 4.0 | 2.1 |
| 1975 | 8.5 | 10.1 | 1.6 | 18.8 | 6.6 | 1.8 |
| 1980 | 20.7 | 22.7 | 2.0 | 9.7 | 1.5 | 0.9 |
| Average | 14.9 | 17.5 | 2.6 | 17.4 | --- | --- |
| | | | Years with average amount of moisure | | | |
| 1970 | 26.0 | 32.2 | 6.2 | 23.8 | 1.7 | 1.5 |
| 1971 | 20.1 | 26.0 | 5.9 | 29.4 | 2.8 | 1.9 |
| 1979 | 11.9 | 13.9 | 2.0 | 16.8 | 3.6 | 1.2 |
| Average | 19.3 | 24.0 | 4.7 | 23.3 | --- | --- |
| | | | Years with greater quantity of precipitation | | | |
| 1973 | 21.2 | 25.6 | 4.4 | 20.8 | 4.1 | 2.7 |
| 1974 | 20.4 | 24.4 | 4.0 | 19.6 | 6.8 | 5.1 |
| 1976 | 30.0 | 33.3 | 3.3 | 11.0 | 3.3 | 3.5 |
| 1978 | 31.7 | 25.7 | 4.0 | 12.6 | 2.5 | 2.5 |
| Average | 25.8 | 29.8 | 4.0 | 15.5 | --- | --- |
| Average for 10 years | 20.6 | 24.4 | 3.8 | 18.4 | --- | --- |

The sizes of the barley yields varied considerably throughout the years. In dry years, when the quantity of precipitation during the spring and summer period did not exceed 38-69 percent of the norm, and the total amount of strong dry winds reached 266-300 percent of the norm in individual years, complete mineral fertilization nonetheless provided for obtaining reliable additions to the yield during two years out of three. During years with average amounts of moisture the effectiveness of the fertlizers increased sharply. The greatest additional yields (5.9-6.2 quintals per hectare) from the basic fertilizer were obtained in 1970-1971 when there were few strong dry winds and the amount of precipitation was close to the norm. In 1975 the effectiveness of the fertilizers decreased in spite of the significant quantity of precipitation (129 percent of the norm), which was caused by the increased number of strong dry winds. This is confirmed by the clearly expressed reverse correlation the amount of additional yield from fertilizers and the total number of strong dry winds--the coefficient of the correlation is 0.9563.

During years with increased quantities of precipitation the positive effects of the basic fertilizer on the barley yield are more stable. Thus while in the dry years the coefficient of the variation of additional yields was 53.8 percent, and in years with normal amounts of moisture--48.9 percent, in moist years it was only 11.5 percent. But the absolute additional yield under these conditions in the majority of cases was somewhat less than the average for moist years. This is explained by the fairly severe lodging of the plants during years when a significant

quantity of precipitation fell and, as a result, reduced effectiveness of the basic fertilizer.

Generalizing the figures that were obtained, one can draw the conclusion that in the steppe regions of Kuybyshevskaya Oblast the basic application of mineral fertilizers in moderate doses ($N_{30}P_{30}$) to barley when it is cultivated on ordinary terraced chernozem is an effective device for increasing the grain yield. But it is important to note that the fertilizers in the steppe trans-Volga area are one of the factors in fighting against drought and contribute to the plants' productive utilization of the moisture in the soil. Thus the additional yield of barley during the moist years was 15.5 percent, during years with average moisture--23.3 percent, and during dry years--17.4 percent. The relatively higher yields in dry years and those with average moisture show that the plants utilize the water better to form the yield of grain on fertilized fields.

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